A Collection of Coral-reef Fishes Made by Dr. and Mrs. Marshall Laird at Fiji

By Henry W. Fowler

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Abstract

Of the 36 species listed, nine are additions to the Fiji Islands. They are *Choerorhthys brachysoma* (F. Syngnathidae), *Cephalopholis argus* (F. Serranidae), *Chrysiptera yamashimai* (F. Pomacentridae), *Tripterygion hemimelas* (F. Clinidae), *Salarias sinuosus* Snyder (F. Blenniidae), *Acentrogobius puntang* (F. Gobiidae) and *Acentrogobius cauerensis* (F. Gobiidae). The *Cheorichthys*, *Chrysiptera*, and *Salarias* are also additional to the vast fish fauna of Oceania. A new species of *Chrysiptera* (F. Pomacentridae) and a new species of *Scorpaena* (F. Scorpaenidae) are described.

The collection here reported contains 360 specimens, chiefly coral-reef forms, of which there are 36 species, comprising 9 new additions to the islands. Two of the latter I am describing as new. I wish to acknowledge thanks to both Dr. and Mrs. Laird for this material, and am equally grateful for the Rennell Island specimens she collected, assisting in all the collecting operations with her husband during his work in the Pacific.

This work has been made possible through the encouragement initiated by the Royal New Zealand Air Force and supported by a grant from the New Zealand Department of Scientific and Industrial Research. Dr. Laird has, therefore, been able to carry on his important parasitological studies and render valued service and advancement in Pacific zoology.

MURAENIDAE

Gymnothorax meleagris (Shaw)

Four, 80 to 195 mm Suva Point, under loose coral blocks on mud flats, March 21, 1954. Agree with *G. laysanus* (Steindachner) and *G. ercodes* Jenkins, as figured by Jordan and Evermann (Bull. Bur. Fisher. U S, Vol. 23, Pt. 1, 1903) (July 20, 1905), p 93, Fig. 22 and p. 95, Fig. 24, respectively.

Gymnothorax undulatus (Lacepède)

One, 85 mm Makuluva, February 21 1954 Colour dark, dull olive grey, with obscure dark lengthwise line, close and parallel with dorsal fin base, but begins before dorsal origin (which is over gill opening) It is distinct almost to middle of fish Rather close, also parallel, below is trace of another imperfect or much broken dark line or streak. Confluent vertical fins around end of tail whitish, for space about long as head.

Colour pattern suggestive of a later stage, like *G. isingleenoides* Bleeker (Atlas Ichth Ind Neerl., Vol. 4, 1864, p 91, Pl 35 Mur.)

SYNGNATHIDAE

Choeroichthys brachysoma (Bleeker)

Syngnathus brachysoma Bleeker, Nat. Tijdschr. Ned. Indie, Vol. 8, 1855, p 327. Batu Islands, East Indies.

Choeroichthys brachysoma Weber and Beaufort, Fishes Indo-Austral. Archip. Vol. 4, 1922, p. 62 (Bourbon, Mauritius, Batu Is, Queensland).

One, 48 mm. Makuluva I., February 21, 1954. An interesting addition to Oceania, as well as Fiji, to the present time its most eastern locality.

APOGONIDAE

Apogon novemfasciatus Cuvier

One, 32 mm. Makuluva I., February 21, 1954. Two, 35 and 55 mm. Under loose coral blocks on mud flats just out of Suva (Suva Point), March 21, 1954 These agree well with the figures given by Jordan and Seale (Bull. Bur Fisher. U S., Vol 25, 1905 (1906), p. 242, Figs. 36 and 37) on Samoan specimens.

SERRANIDAE

Cephalopholis argus Schneider

One, 104 mm. Makuluva I., January 2, 1954 Compared with the original account, the coloured figure by Heunig, as published by Schneider, shows the tips of the dorsal spines with the membrane tip of each following as free and detached (in my specimen adnate) The photo of a Bikini Atoll specimen by Schultz (Bull. U.S. Nat. Mus., No 202, Vol. 1, 1953, p. 202, Pl. 30, Fig. B) has irregular white marks on the vertical fins, over the pectoral and on the opercle. My specimen with most of the edges of the fins broadly and irregularly white, with some white blotches on the caudal terminally Not previously reported from Fiji.

Epinephelus merra Bloch

Twenty-four, 54 to 128 mm Makuluva I., January 2, 1954. Also one 205 mm, same locality, February 21. Compared with Bloch's plate 329 the caudal and anal are shown with fewer and larger spots, no dark blotches or spots on the under surface of the head, breast and prepectoral region, and altogether the spots on the body are more numerous and uniform. Many of the specimens show a narrow white lower edge to the anal, against a black submargin.

Plesiops nigricans (Rueppell)

One, 30 mm. Makuluva I, February 21, 1954.

PSEUDOCHROMIDAE

Pseudochromis tapeinosoma Bleeker

Fifteen, 21 to 45 mm. Makuluva I., February 21, 1954.

D. II, 24. Cheek with 2 or 3 rows of scales; 29 in axial lateral row to caudal base. Largely dark or blackish brown, paler on under surface of head and belly Vertical fins more or less blackish, all with broad pale to whitish borders. The white border on the caudal is especially broad at the upper and lower hind margins, but does not meet on the ends of the central rays, as they are blackish to their tips.

Once reported from Suva, based on a specimen 39 mm long by Herre (Field Mus. Nat. Hist., Zool. Ser, Publ 353. April 15, 1936. p. 167). It is described with "the vertical fins and caudal black".

CHAETODONTIDAE

Chaetodon auriga Forskael

One, 31 mm. Makuluva I., February 21, 1954.

POMACENTRIDAE

Pomacentrus nigricans (Lacepède)

Twenty-six, 28 to 87 mm. Mukuluva I. Preorbital width only $\frac{2}{3}$ of eye diameter. Colour dark shaded olive, with scale edges all darker or dusky. Ventrals blackish. Fins more or less gray, with parts of lobes of vertical fins pale to grey white. Compared with 2 larger specimens from Analgauhat, Aneityum Island, New Hebrides, it shows a much smaller black spot at the insertion of the pectoral.

The figure of Obbes, as published by Dr. de Beaufort (Fish. Indo-Austral Archip, Vol 8, 1940, p 353, Fig. 46) differs from my specimens in having a single row of scales on the suborbitals below the eye, without indication of the lower and hind suborbital edge (the latter with 7 or 8 denticles on the hind edge in my specimens, but the scales all small and obscure), cheek with 4 rows of scales (my specimens with 4 rows of large scales and some very small irregular scales on lower preopercular flange).

Chrysiptera zonata (Cuvier)

One, 39 mm. Makuluva I, February 21, 1954. D XIII, 10? A. II, 11. Transverse pale band, 3 scales wide on side opposite of depresed ventral fin. Pectoral dull greenish yellow, other fins dusky and ventrals blackish.

Chrysiptera biocellata (Quoy and Gaimard)

One, 30 mm ? (caudal margin damaged). Makuluva I., January 2, 1954. Large black blotch on caudal peduncle

Chrysiptera yamashimai (Okada and Ikeda)

Abudefduf yamashimai Okada and Ikeda, Bull Biogeogr. Soc. Jap., Vol. 7, No. 7, March, 1937, p. 82, Text-fig. 1. Miyako I., Riu Kiu Is.

One, 38 mm. Makuluva I., January, 2, 1954. Agrees in the large humeral scale above base of pectoral fin, large black blotch on upper half of pectoral base, and the black blotch at the bases of the last dorsal rays. It differs, apparently, only in the presence of a transverse pale band across lower surface of the head, from one lower eye edge to that of the other. Not previously reported outside the Riu Kiu Islands and therefore an addition to the Fijian fauna as well as Oceania.

Chrysiptera assimilis (Guenther)

Glyphidodon assimilis Guenther, Cat Fish Brit Mus., Vol 4, 1862, p. 52. Borneo. Philippines, Indian Seas.

Abudefduf assimilis Beaufort, Fish. Indo-Austral. Arch., Vol. 8, 1940, p. 431 (East Indies)

Chrysiptera uniocellata Fowler, Mem. B P. Bishop Mus., Vol. 12, No. 2, 1949, p. 125 (part).

One, 27 mm, January 2, 1954; and one, 35 mm, February 21; both from Makuluva I Identified as the young chiefly from Beaufort, as he says, "a deep black blotch, more or less encircled by shining bluish white, at base of median rays." Also two others, same locality, February 21. 1954, 20 to 43 mm long

Larger with body yellowish green. Large blackish ocellus on front part of soft dorsal.

Chrysiptera leucozona (Bleeker)

One, 53 mm. Makuluva I., January 2, 1954. D. XII, 14. A. II, 12. P. ii, 16. Tubes in l.l. 17, pores 8. Head dark brown, darker than chest or breast. Diffuse pale to whitish broad transverse band up from anus to l.l. Back and body dark brown, chest paler. Vertical fins dark grey. Pectoral pale yellow, caudal with light to whitish borders all around. Ventrals dark on forward half, white on hind half.

Twenty-nine, 28 to 68 mm Makuluva I., February 21, 1954. Some of smaller ones with black spot at bases of last dorsal rays.

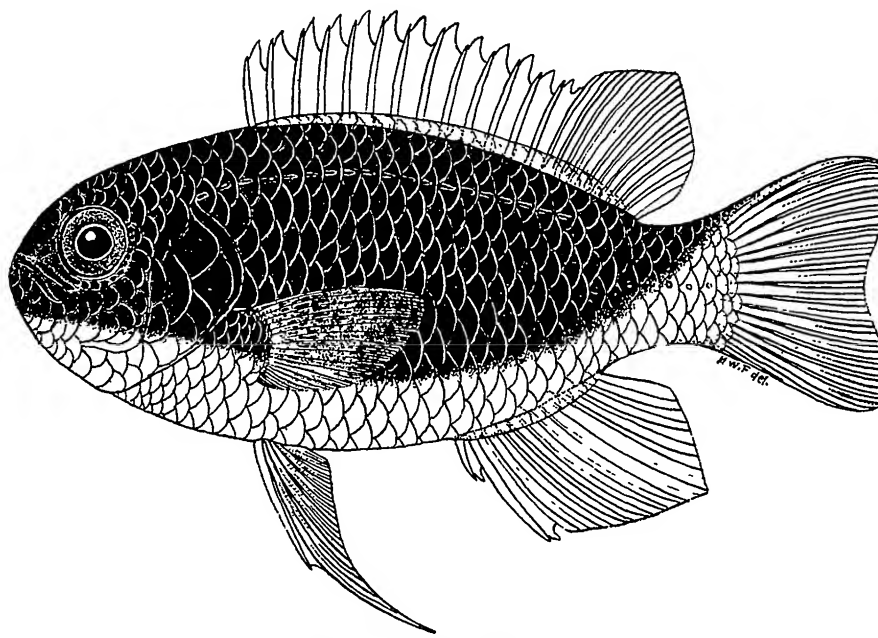
One, 36 mm. Under loose coral rock or mud flats just out of Suva (Suva Point), Viti Levu. March 21, 1954. Agrees largely with *Abudefduf leucozona* as figured in Montalban (Monogr 24 Bur Sci Manila, April 20, 1928. p 92, Pl. 18, Fig. 2).

Chrysiptera leucopoma (Cuvier)

One, 40 mm, January 2, 1954, and one, 25 mm, February 21, 1954; both from Makuluva I Pale olive brown above, much lighter below Darker areas on front, snout above and occiput As seen from above snout with narrow deep brown angle forward to its front, from where it follows closely along dark border of upper lip Pectoral pale, other fins all more or less greyish Also 12 others, same locality, February 21. All have pale ventrals.

Chrysiptera glauca (Valenciennes)

Fifty-one, 22 to 69 mm Makuluva I, February 21, 1954 They agree largely with Okada and Ikeda (Trans Biogeogr Soc. Jap., Vol 3, No. 2, October, 1939,



TEXT-FIG. 1.—*Chrysiptera elizabethae* new species Type.

p. 181, Text-fig. 14. Isigaki I. and Iriomote I, Riu Kiu). All are uniformly brownish and the larger ones have the submarginal narrow pale or whitish line on the dorsals. The figure, however, does not show the dark upper edge to the long basal dorsal scaly sheath Ventrals pale. Several show faint traces of the dark forward angle on the upper forward part of the snout, suggesting *C leucopoma.*

Chrysiptera elizabethae new species. Fig. 1, type.

Depth $2\frac{1}{4}$ to $2\frac{1}{3}$; head $2\frac{2}{5}$ to 3; width $1\frac{1}{7}$ to 2 Snout $4\frac{1}{2}$ to $4\frac{3}{4}$ in head, front end or tip level with lower edge of pupil; eye $2\frac{3}{8}$ to $3\frac{1}{5}$, exceeds snout or interorbital; maxillary reaches below front edge of eye, length $3\frac{1}{3}$ to $3\frac{1}{4}$ in head; teeth close set, compressed, form even uniserial cutting edge; narrow suborbital and preopercular edges entire, convex interorbital width 4 to $4\frac{1}{2}$ in head. Gill rakers 4 + 12, slender, lanceolate.

Lateral line tubes 18—pores 6; 2 scales above upper section, 9 below to vent. Several large scales on opercle Scales on top of head not extended forward of front of eye, with snout and preorbital naked. Cheek with 2 rows of large scales Along bases of dorsals and anals rather low scaly sheaths Caudal crowded basally with small scales.

D. XIII, 12, spinous fin edge deeply incised behind each spine tip; soft dorsal elevated medially; A II, 12, second spine longer than dorsal spines and rayed fin with point of longest rays behind middle of fin, caudal slightly emarginate behind; pectoral rays ii, 19, long as head without snout, ventral I, 5, spine longer than second anal spine and fin slightly exceeds head.

Colour when first received with head and greater upper part of body shining black, well and evenly contrasted with whitish under surface of head, chest, breast and belly, and behind brilliant golden yellow, above anal and including all of that fin, lower half of caudal peduncle and all of caudal. Above black colour of body equally contrasted with brilliant golden yellow of dorsal fins. Pectoral grey, with narrow basal bar transversely.

Type No 71972 Acad Nat Sci Phila. Coral reef off Makaluva Island, near Suva, Fiji, February 21, 1954 Dr. and Mrs Elizabeth A Laird Length, 48 mm Also Nos 71973 to 71984, same data, paratypes Length, 38 to 52 mm.

The species appears unique in its greatly contrasted colour pattern and elongate ventrals, the long ventral and second anal spines, scaleless snout, apparently not approaching closely any of the numerous species of *Chrysiptera* in Oceania.

(Named for Mrs. Elizabeth A Laird)

LABRIDAE

Stethojulis axillaris (Quoy and Gaimard)

Six, 32 to 60 mm Makuluva I, February 21 1954

One, 22 mm On loose coral blocks on mud flats just out of Suva (Suva Point). Viti Levu; March 21, 1954 When fresh in alcohol nearly uniform pale green. Pectoral fin and base without dark bar. Fins all more or less pink. A single small black spot at caudal base, slightly above centre.

Halichoeres margaritaceus (Valenciennes)

Two, 58 mm. Makuluva I, January 2, 1954 No black spot at upper caudal base, but one at front of spinous dorsal, and another larger and ocellated at front

of soft dorsal above. Opercular lobe with dark grey blotch, bordered with black in front.

Eight, 29 to 50 mm. Makuluva, 1954.

Thirty-two, 37 to 93 mm. Makuluva I, February 21, 1954. Some rather orange and vermilion shades on head, parts of trunk, and on vertical fins.

Thalassoma hardwicke (J. W. Bennett)

Twenty, 35 to 75 mm. Makuluva I., February 21, 1954 Dark bars on back all more or less grey. Pectoral uniform or pale green.

Thalassoma lutescens (Lay and Bennett)

One, 45 mm. Makuluva I., February 21, 1954 Scales on chest and breast, notably smaller than those on the sides of the body Colour light green, paler below. Fins all pale. Dark brown lengthwise band from the eye to the bases of the upper median caudal rays, as in my figure of the Hawaiian *T. duperrey* (Quoy and Gaimard), from a specimen 109 mm long. (Mem. B. P. Bishop Mus., Vol. 11, No 5, 1931, p 357, Fig 5), pectoral uniformly pale.

CLINIDAE

Tripterygion hemimelas (Kner and Steindachner)

One, 29 mm. Makuluva I., February 21, 1954 When fresh in alcohol pink, with lower half of side of head and area before pectoral blackish, but this colour not extended across the under surface of the head. Fins uniformly pale

Depth, $4\frac{1}{2}$; head, $3\frac{1}{4}$; width, $1\frac{2}{3}$. Snout, $3\frac{1}{2}$ in head; eye, $3\frac{1}{2}$; maxillary, $2\frac{2}{5}$, reaches below front edge of eye; narrow interorbital wide as pupil Scales 3 above lateral line, 18 tubes in upper section, 15 [9] in lower section—4 scales below. D. III–XIV–8; A I, 16; P. 16, slightly longer than head. Ventrals reach vent, but not anal fin origin. Caudal slightly convex behind.

Apparently differs from *Tripterygion atripes* Jenkins in its more uniform colour, details of scale and fin structure and proportions. Not previously reported from Fiji.

BLENNIIDAE

Petroskirtes kallosoma Bleeker

Two, 35 to 38 mm. From just out of Suva Point, under loose coral blocks on mud flats; March 21, 1954.

Salarias edentulus (Schneider)

One 72 mm. Makuluva I., February 21, 1954. D XIII, 20. A. II, 21. On second membrane of first dorsal, little below middle, a dark grey ring Pair of nuchal cirri present.

Salarias periophthalmus Valenciennes

Seventeen, 28 to 105 mm. Makuluva I., February 21, 1954 D XI to XIII, 22. A. II, 22 or 23. Dark transverse bands 7, within each two small, well-spaced grey ocelli, lower axial and other on side of back Pair of dark spots at caudal base, one above the other. No crest. Two small dark spots, one above the other, close behind eye. Nuchal filament each side in larger specimen.

Compared with the coloured figure by Oudard, and published by Valenciennes as *S. periophthalmus*, Pl. 328, many defects are apparent. It shows D. XII, 20;

A. 23; a long supraorbital tentacle $1\frac{3}{5}$ eye diameters, upper pectoral rays longer than lower median, caudal fin round instead of lower median rays longest, and dorsals and head covered with small, uniform close set red spots.

Salarias sinuosus Snyder

Salarias sinuosus Snyder, Proc. U S Nat. Mus., Vol. 35, 1908, p. 109; Naha, Okinawa, Riu Kiu Islands.

Two, 52 to 55 mm. Makuluva I., February 21, 1954 D. XII, 18 A. II, 22, front rays elongated. Not previously recorded from Fiji.

Salarias fasciatus (Bloch)

Forty-five, 42 to 78 mm The original coloured figure by Kruger and published as *Blennius fasciatus* by Bloch in 1786 is imperfect in its fundamental pattern, with most of the finer details lacking. The entire dorsal fin, caudal confluent with hind parts of dorsal and anal, and the uniform coloured belly are perhaps most distinctive. The nuchal filaments are not shown.

ELEOTRIDAE

Eviota viridis (Waite)

One, 21 mm. Makuluka I., February 21, 1954. Agrees with the figure of *Allogobius viridis* Waite (Rec. Austral Mus., Vol. 5, No 3; March 11. 1904; p. 177, Pl. 23, Fig. 3, Lord Howe Island), especially in the last dorsal spine extended in a long filamnet, the fin, however, over its greater outer terminal portion contrasted black. Also the anal fin is largely black and the basal caudal bar likewise greatly widened and extended above and below.

GOBIIDAE

Bathygobius fuscus (Rueppell)

Two, 43 mm. On loose coral blocks on mudflats just out of Suva (Suva Point), Viti Levu; March 21, 1954. Head, $3\frac{1}{4}$; depth, 4. D. VI–I, 9 A. I, 8 or 9. Anal papilla depressed, narrowly triangular, long as large pupil Upper lip forms front end of snout. Scales in lateral row 33–2; predorsal scales 20, not quite forward to eyes, head otherwise scaleless P. rays 20, upper finely silky Body dark olive, fins and head blackish Ventrals grey-white.

Acentrogobius puntang (Bleeker)

One, 36 mm. Under loose coral blocks on mud flats just out of Suva (Suva Point), Viti Levu; March 21, 1954. D VI—I, 9. A 1, 9 P 18, without silky free rays. Scales 28–2 in lateral row, transversely 11; before dorsal 10 to eyes; large scales on heek and opercles. Front edge of tongue with median notch Rather dark olive grey Broad black band from eye to lower edge of gill opening, not crossing isthmus. Under surface of head little paler than sides or above. On back 6 darker saddles, each greater than paler interspaces and below extend well down towards anal fin Each row of scales lengthwise with dark median line, formed chiefly as dark spot on each scale exposure, at least above or on back. Each spine and ray of dorsals with about 6 dark to blackish small spots. Caudal grey, with some larger postbasal black median spots, and smaller grey spots above. Pectoral uniform grey. Ventral, with frenum in front, grey-black. Anal greyish, with 3 lengthwise grey bands, outer of which less defined Black spots on back and sides, and upper parts of head well contrasted.

This is an interesting early stage, not previously noted. The species not previously reported from Fiji.

Acentrogobius cauerensis (Bleeker)

One, 59 mm. Under loose coral blocks on mud flats just outside Suva Point, Viti Levu; March 21, 1954. D. VI–I, 12. A. 12, last depressed rays extend little beyond caudal base. Scales 28 in lateral row; 8 transversely; 9 before dorsal. Ventrals longer than head. Black line arched forward close behind end of maxillary to completely cross over the under surface of the head. The second is the main black vertical bar down from the eye, which crosses down to, but not connecting, across the isthmus. The last dorsal and anal rays are much longer than shown on the Starks picture, or equal the head without snout. Pectoral very finely dotted with dark grey. Ventral grey-black. Long ventral over-reaches front of anal short space. Caudal finely barred with darker, with numerous dark spots basally and terminally, still more numerous and crowded. Not previously recorded from Fiji.

Gobius ornatus Rueppell.

One, 77 mm. Under loose coral blocks on mud flats just out of Suva (Suva Point); March 21, 1954.

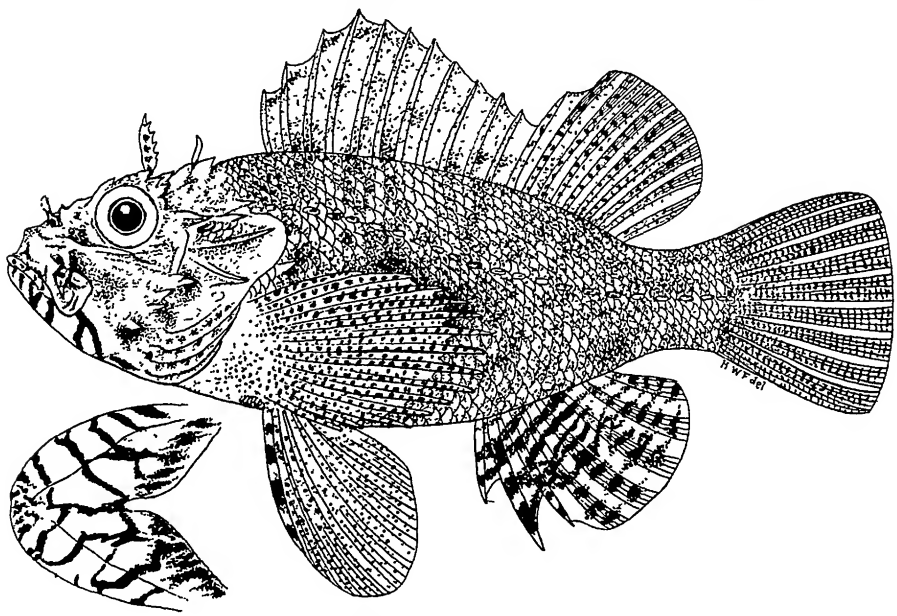
SCORPAENIDAE

Scorpaenodes guamensis (Quoy and Gaimard)

Two, 50 to 81 mm. D. spines XIII. Makuluva I., February 21, 1954.

Scorpaena lineagula new species Fig. 2, type

Depth, $2\frac{5}{6}$; head, $2\frac{2}{7}$; width, $1\frac{2}{3}$ (as compressed, as head well expanded). Snout (in profile) $3\frac{1}{3}$ in head, front tip level with lower edge of eye; maxillary reaches opposite front of eye, length $3\frac{1}{4}$ in head; teeth in jaws minute, villiform,



TEXT-FIG. 2.—*Scorpaena lineagula* new species. Type

in rather narrow bands; bands of minute teeth on each palatine and patch across vomer; interorbital width equals eye, deeply concave, top of head depressed, without a deep pit. Gill rakers 5 + 8, short, low, spinescent, tubercle like

Front nostril with small filament, each before small nasal spine; 2 supraorbital spines, second longest and with long tentacle equal to eye; above and behind eye two more shorter spines; parietal spine with short filament, close before occipital spine; rather long postorbital spine; 2 opercular spines; small suprascapular spine; broad preorbital spine with rather large fleshy flap; suborbital stay with small median spine, below hind edge of pupil, and stay ends behind with 2 closely bound spines; below on preopercle edge 3 small spines; humeral spine moderate.

D. XII, 9, spinous fin slightly lower than rayed fin, fourth spine longest, rayed dorsal height 2 in head; A. III, 5, second spine longest; caudal slightly convex as expanded; pectoral 15, rays all simple and ends free, more so of longer ones; ventral I, 5, but little less than pectoral

Lateral line with 23 tubes, scales close along and above lateral line 35; predorsal scales 9, extend forward little over half way to eye, head otherwise only with few scales on upper part of opercle; small rounded patch of minute close set scales on breast close before ventrals, on body scales all in inclined rows, but only extend on caudal base for short space, fins otherwise scaleless.

Colour in alcohol brown, variegated and marked with darker to blackish-grey. On fins innumerable small to minute spots or dots, often superimposed on darker or more extensive areas. Under surface of head whitish, with connected black lines in bold contrast.

Type No. 71985 Acad Nat Sci. Phila Under loose coral blocks on mudflats just out of Suva (Suva Point), Viti Levu, Fiji; March 21, 1954; Dr and Mrs. Elizabeth A Laird. Only the type obtained.

Apparently unique in its coloration in combination with all pectoral rays simple. palatine teeth, scalation, etc.

(*linea* line + *gula* throat; with reference to the black lines on the chin and throat.)

ACANTHURIDAE

Acanthurus triostegus (Linnaeus)

Twenty-eight, 30 to 54 mm. Makuluva I. February 21, 1954 All have the blackish blotch before upper pectoral base like the cut of *A triostegus triostegus* (Schultz and Woods, Bull U S Nat. Mus, No 202, Vol 1, 1953, p 624, Fig. 93d and e, outlines) from Phoenix Islands specimens.

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